NOAA's 3-Month Drought Outlook (DO)

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NBR, November 6, 2012, Boulder, CO

Photo: O'Lenic, 2007

Some Forecasting Facts of Life

- Soils accumulate or lose moisture slowly.
- Drought's impacts are often felt in spring, summer.
- Drought predictions are likely useful out to no more than 6 months.
- Drought forecasts rely entirely on precipitation forecasts.
- Precipitation is naturally harder to predict than temperature.
- Prediction skill is also limited by observation density & accuracy, forecast lead-time, model accuracy, area and period covered, location, time of year.

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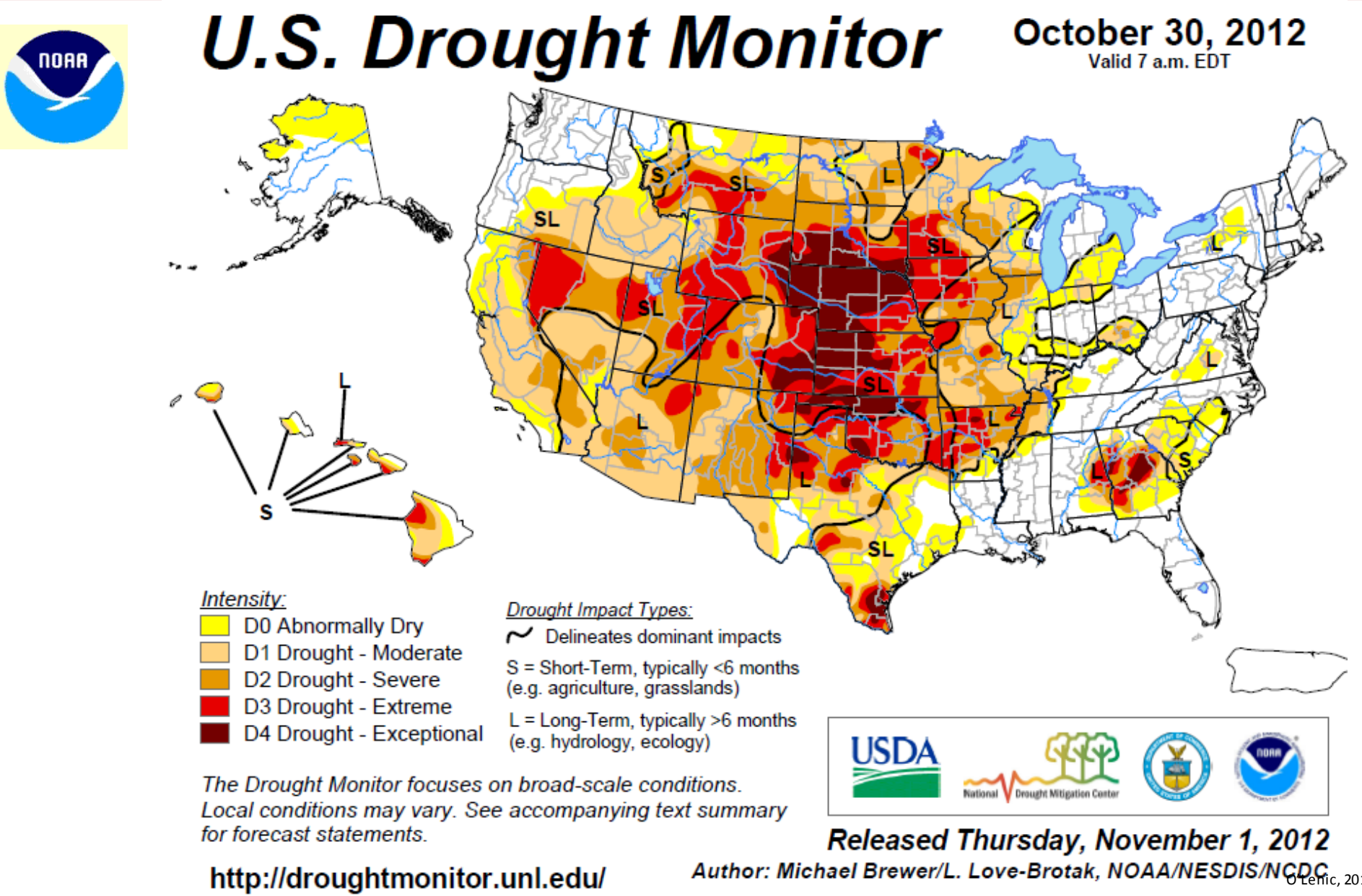
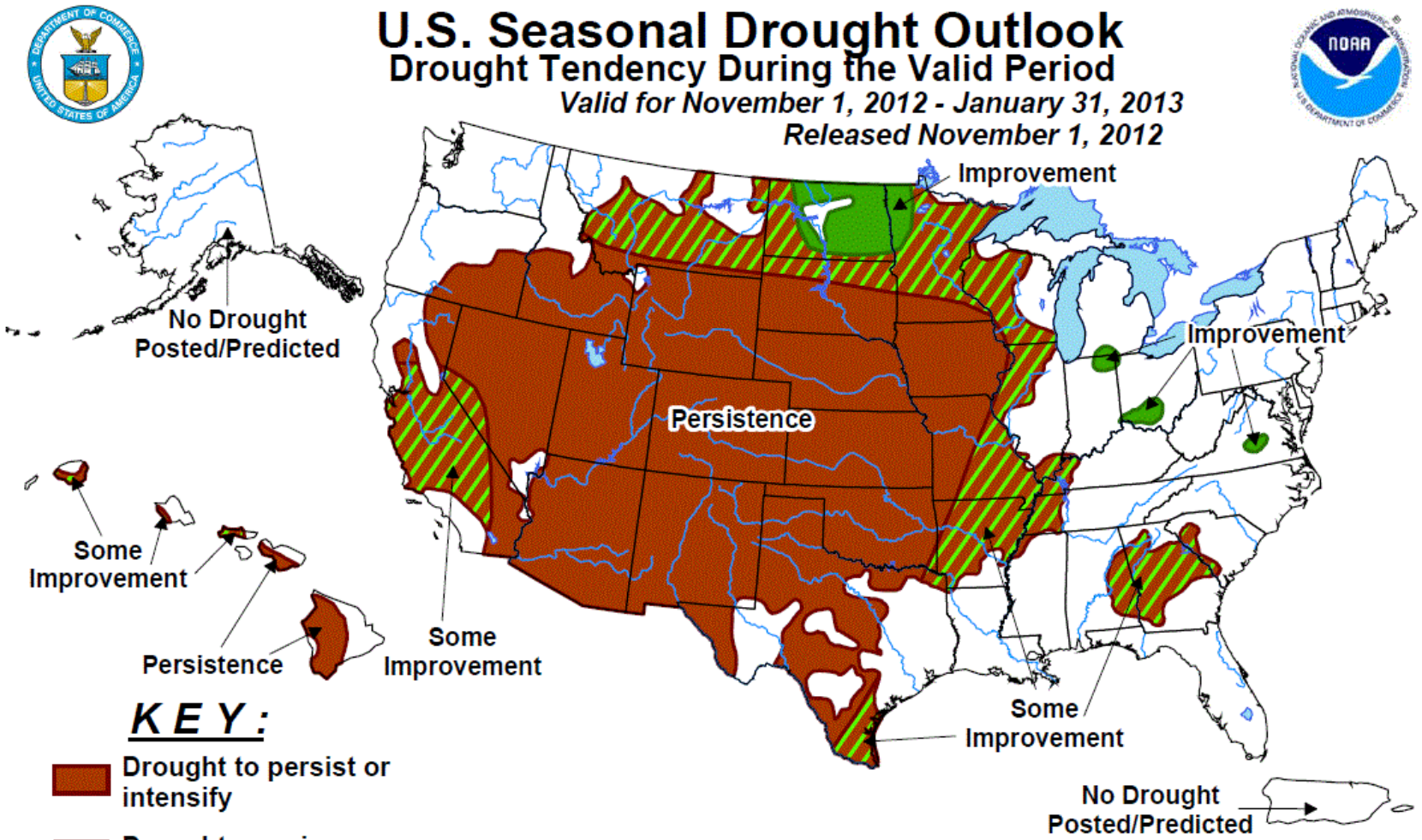
CPC, NDMC, USDA, NCDC jointly produce a weekly Drought Monitor (DM), assessing current conditions. **THE WEEKLY DM IS THE STARTING POINT FOR THE DO. INPUTS INCLUDE: THE 3-MONTH P OUTLOOK, REGIONAL EXPERT ASSESSMENTS, TELCONS, SHORT-MEDIUM RANGE FORECASTS.**



CPC Produces a Drought Outlook (DO) at mid- and end-of-month. The DM sets the starting soil conditions



KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

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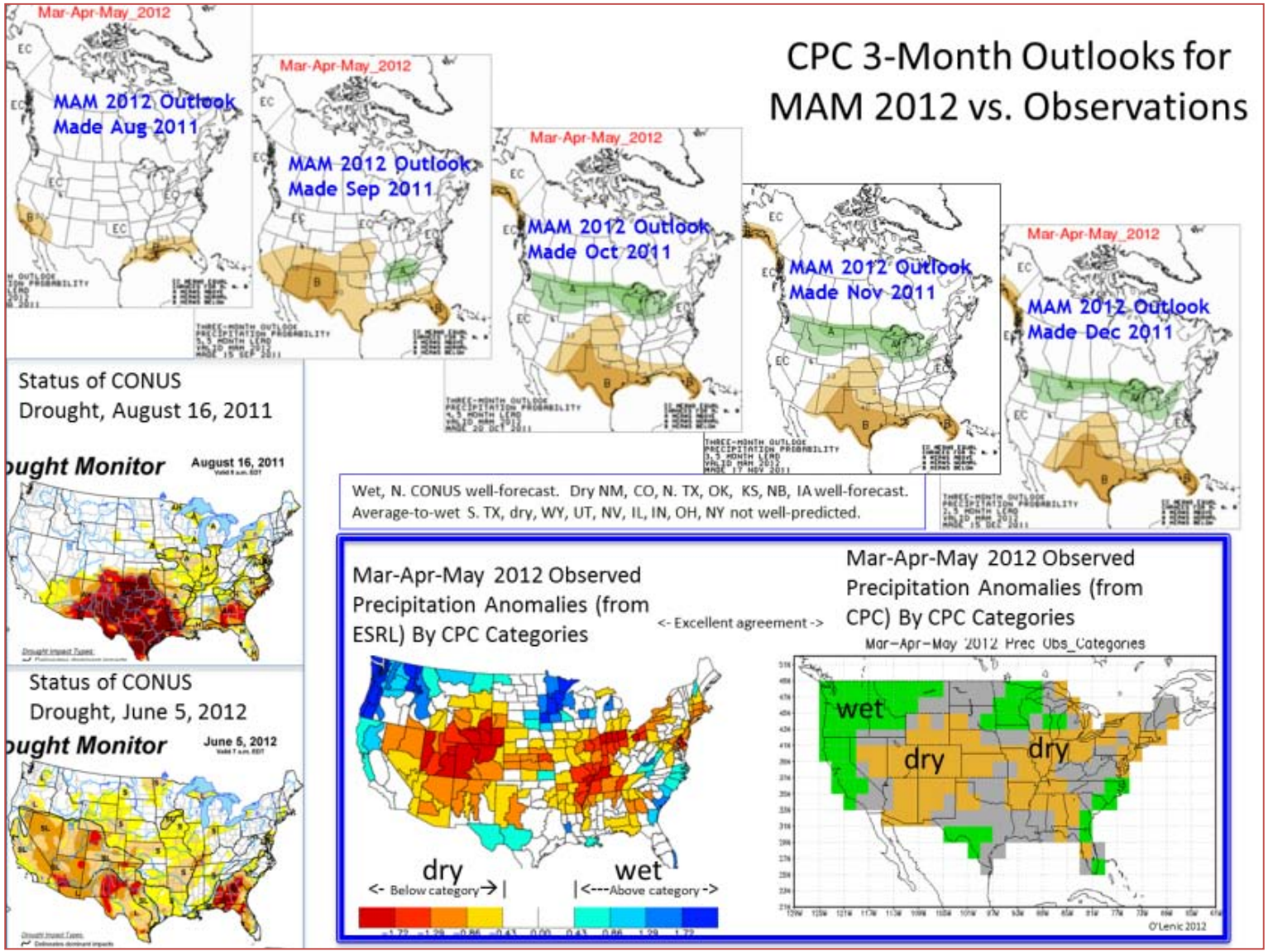
Review of Climate Prediction Center's Mar-Apr-May (MAM) 2012 3-mo Precipitation Outlook



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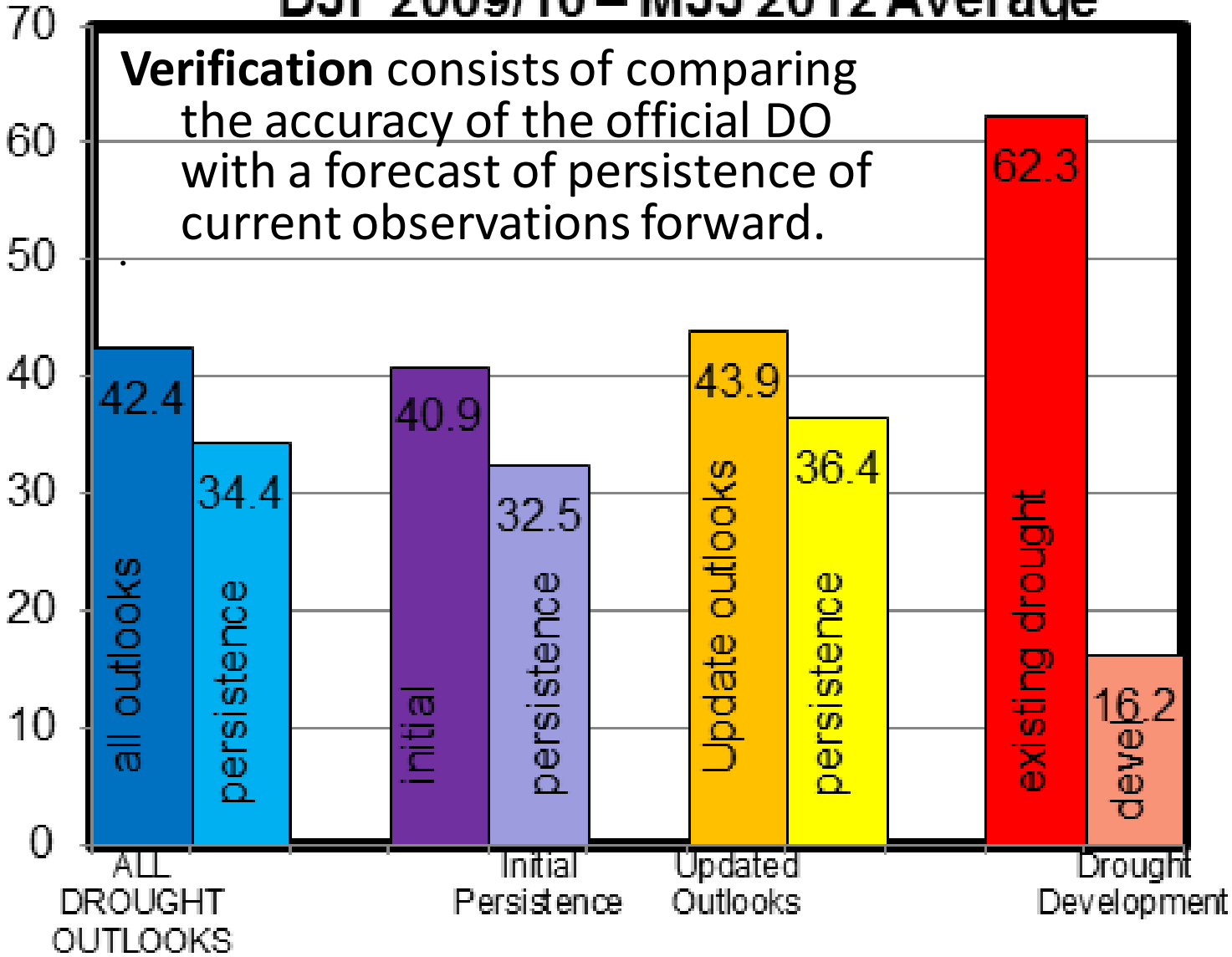
D.O. VERIFICATION: Percent of Area Accurately Forecast
DJF 2009/10 – MJJ 2012 Average



Verification consists of comparing the accuracy of the official DO with a forecast of persistence of current observations forward.

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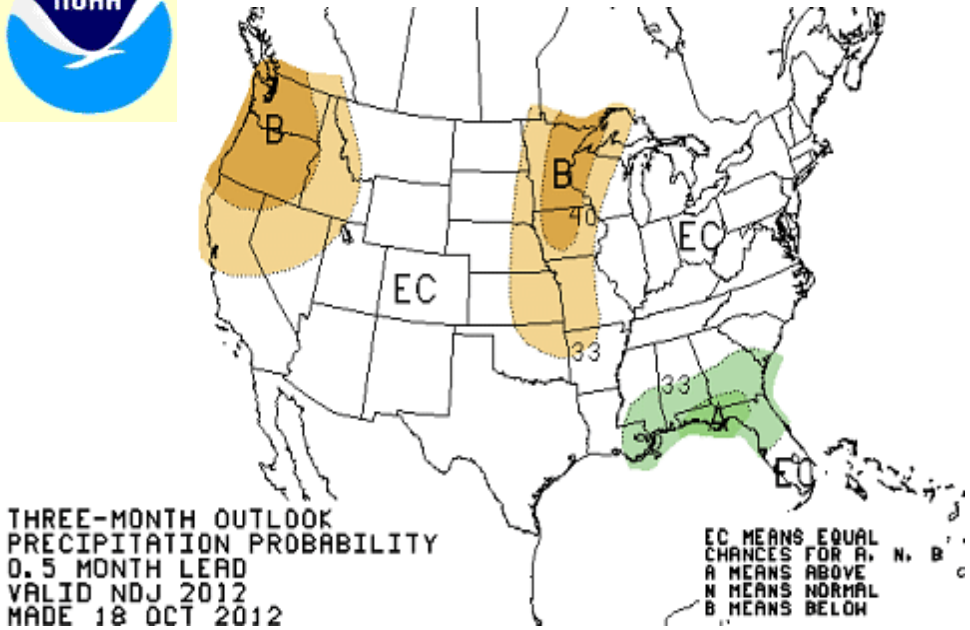
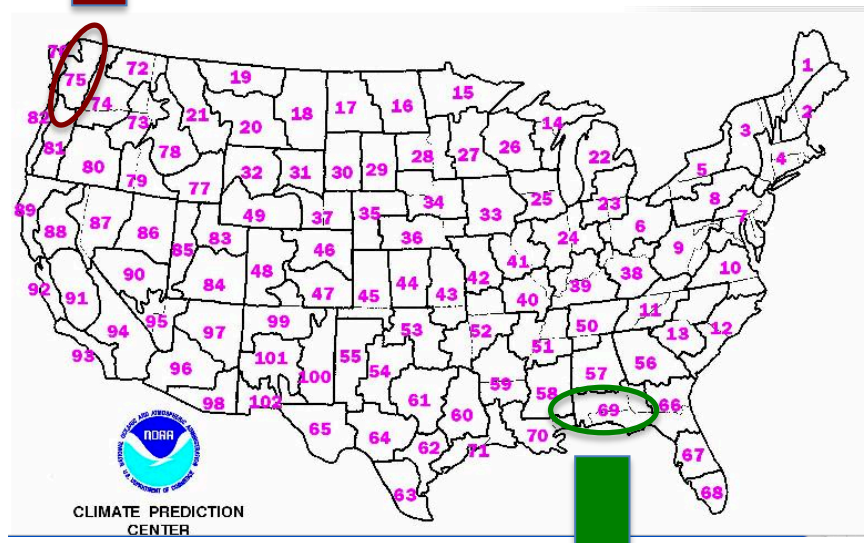
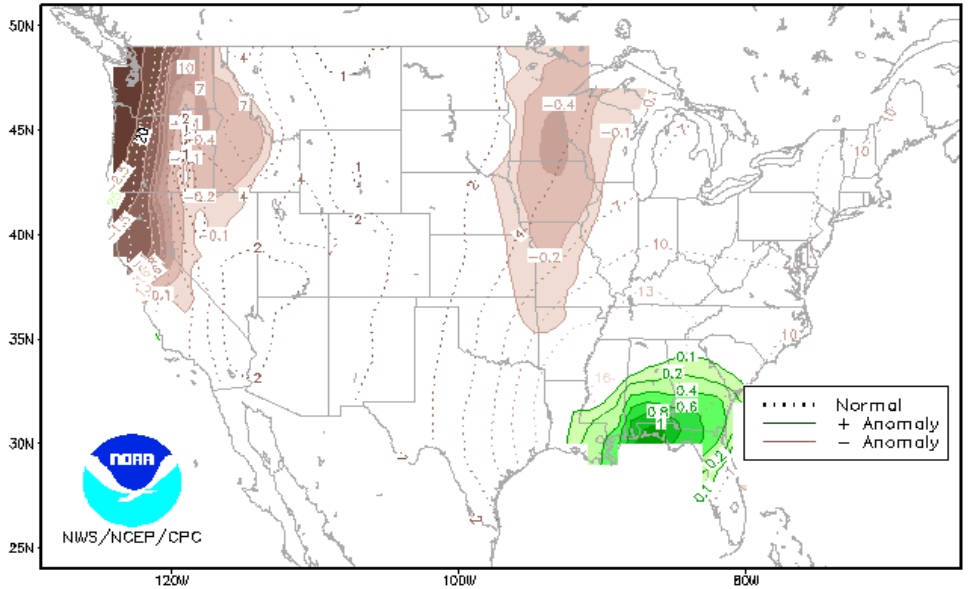


Pr of highest 10% (>41.65”): 4.4%
Pr of above 66.66% (>35.2”: 20.8%
Pr of median (28.67-35.20”): 32.9%
Pr of below 33.33% (< 12.84”): 46.3%
Pr of lowest 10% (< 9.65”): 16.2%





Pr of highest 10% (>20.74”): 13.8%
Pr of above 66.66% (>16.56”: 41.5%
Pr of median (12.84-16.58”): 33.4%
Pr of below 33.33% (< 12.84”): 25.1%
Pr of lowest 10% (< 9.65”): 6.15%

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Summary , Part 1

- Soil dryness/wetness changes slowly. This means "persistence" of current conditions is a fair forecast.
- Drought forecasts depend on precipitation forecasts
- Precipitation is harder to forecast than temperature
- NOAA drought forecasts are about 7%-8% better than simple persistence forecasts.
- Outlooks are far better at predicting existing drought than in predicting new drought.
- Risk assessment requires matching-up forecast probabilities for specific events (whether they represent success or failure) with the $$ costs of those events. This implies partnership is needed.

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PART 2: Creation of the U.S. Seasonal Drought Outlook

Current drought conditions

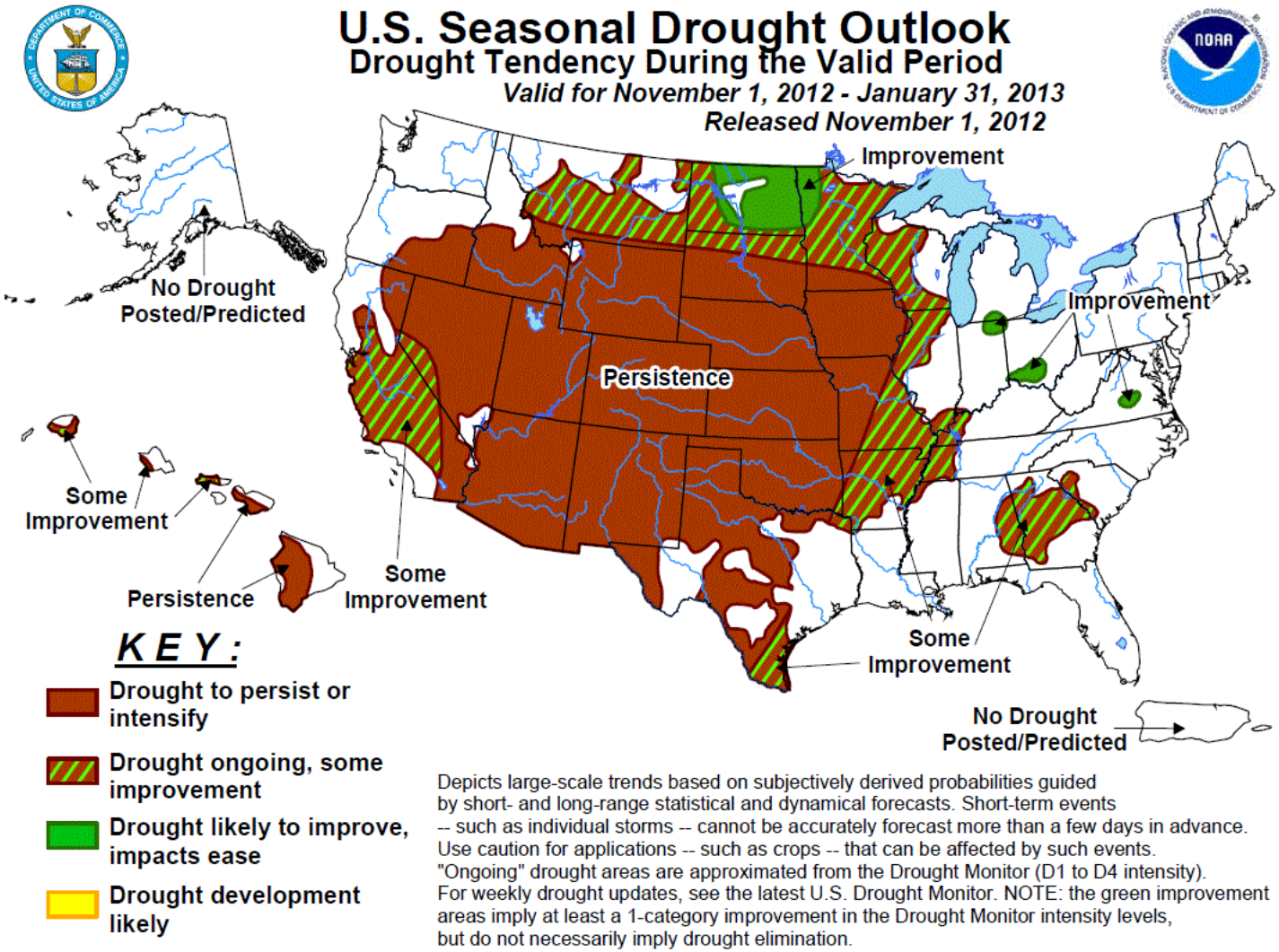
Climatology considerations

Short and medium range forecast guidance

ENSO

Monthly and seasonal forecast guidance

Feedback from local experts



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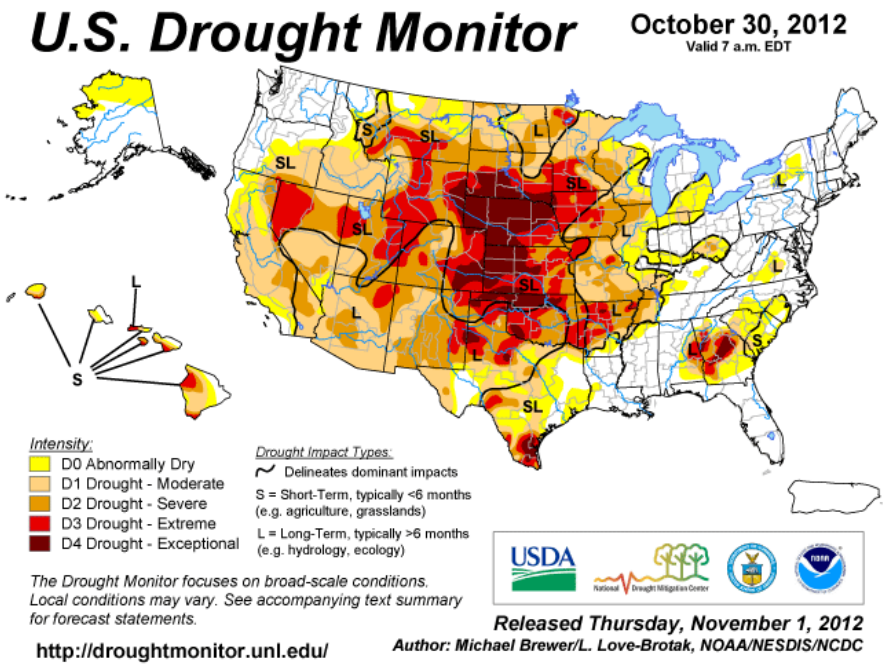
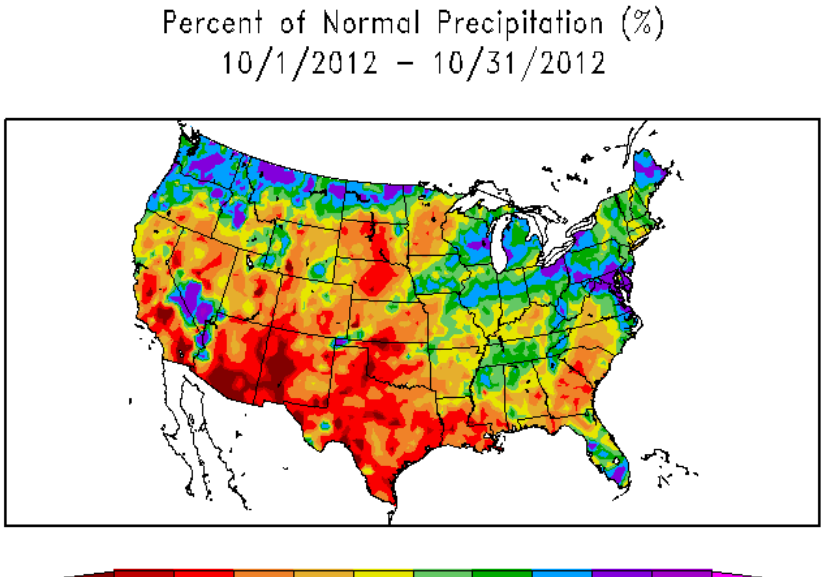
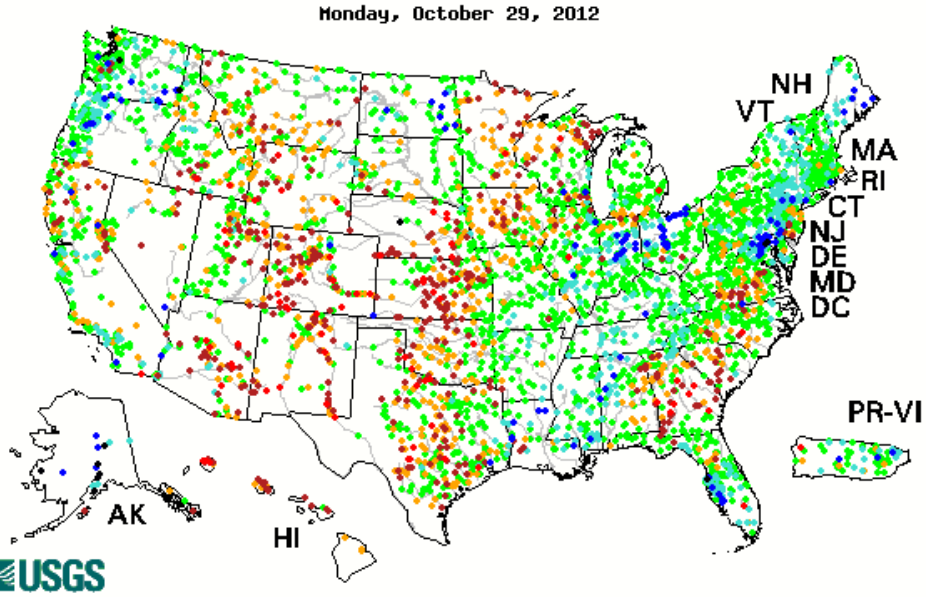
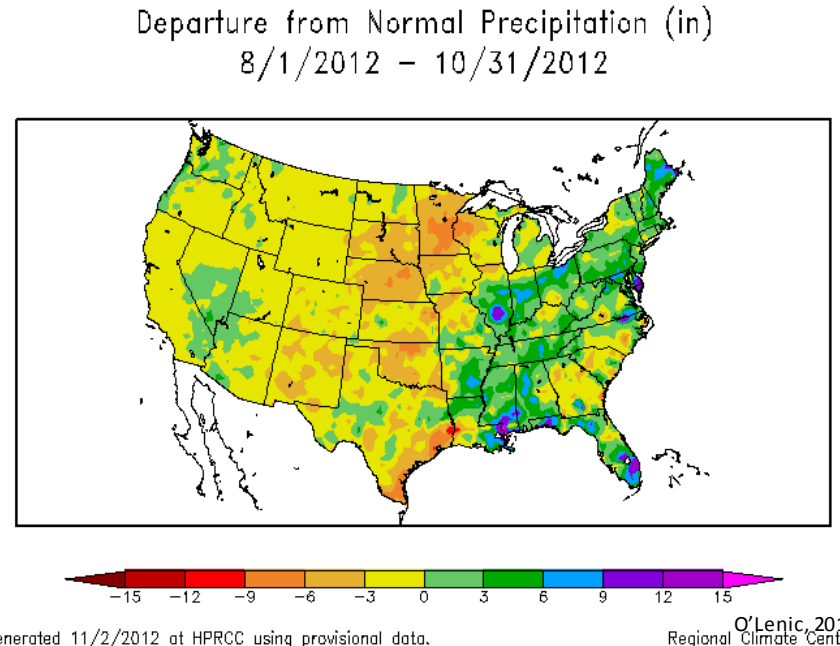
Current Drought Conditions









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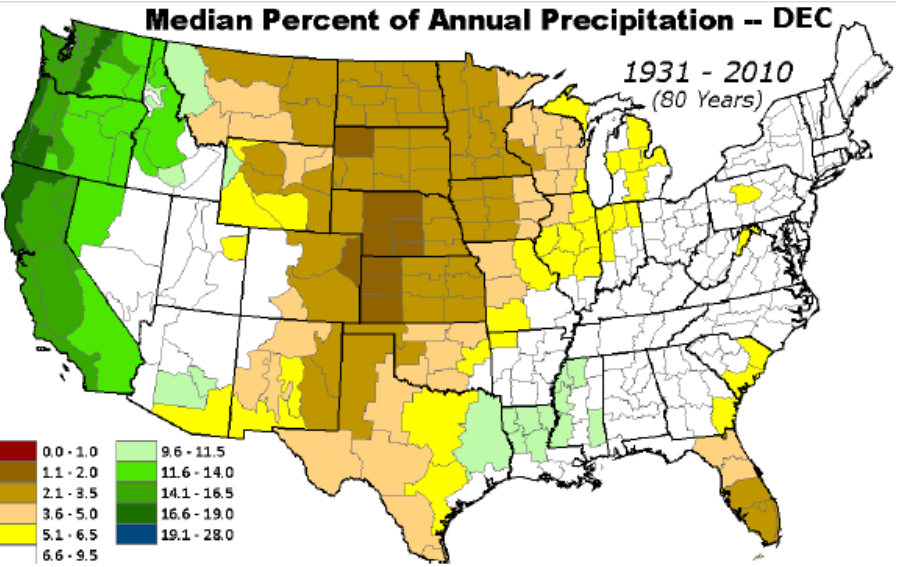
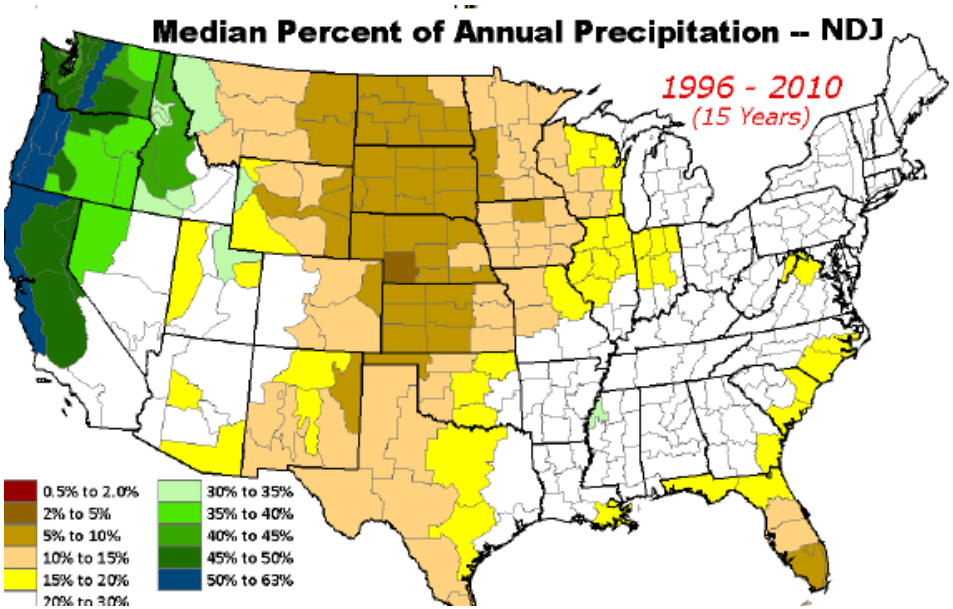
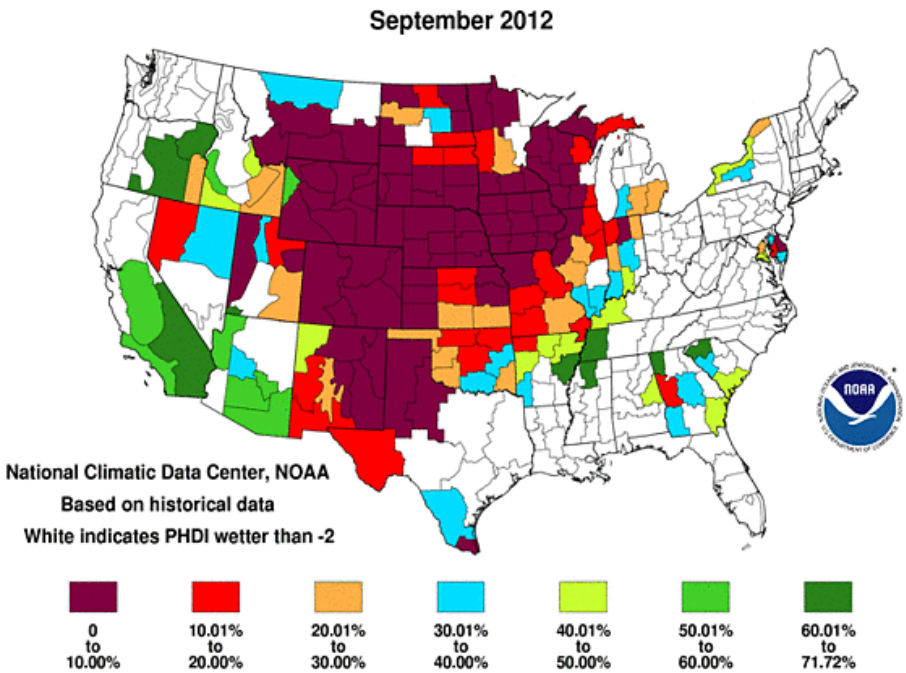
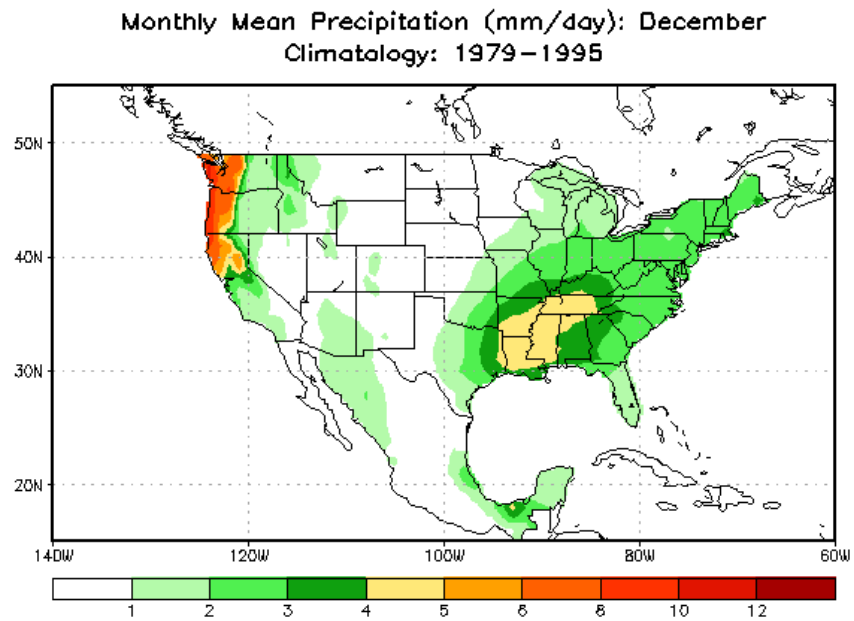
Climatology Considerations









Probability of drought amelioration (4 months)

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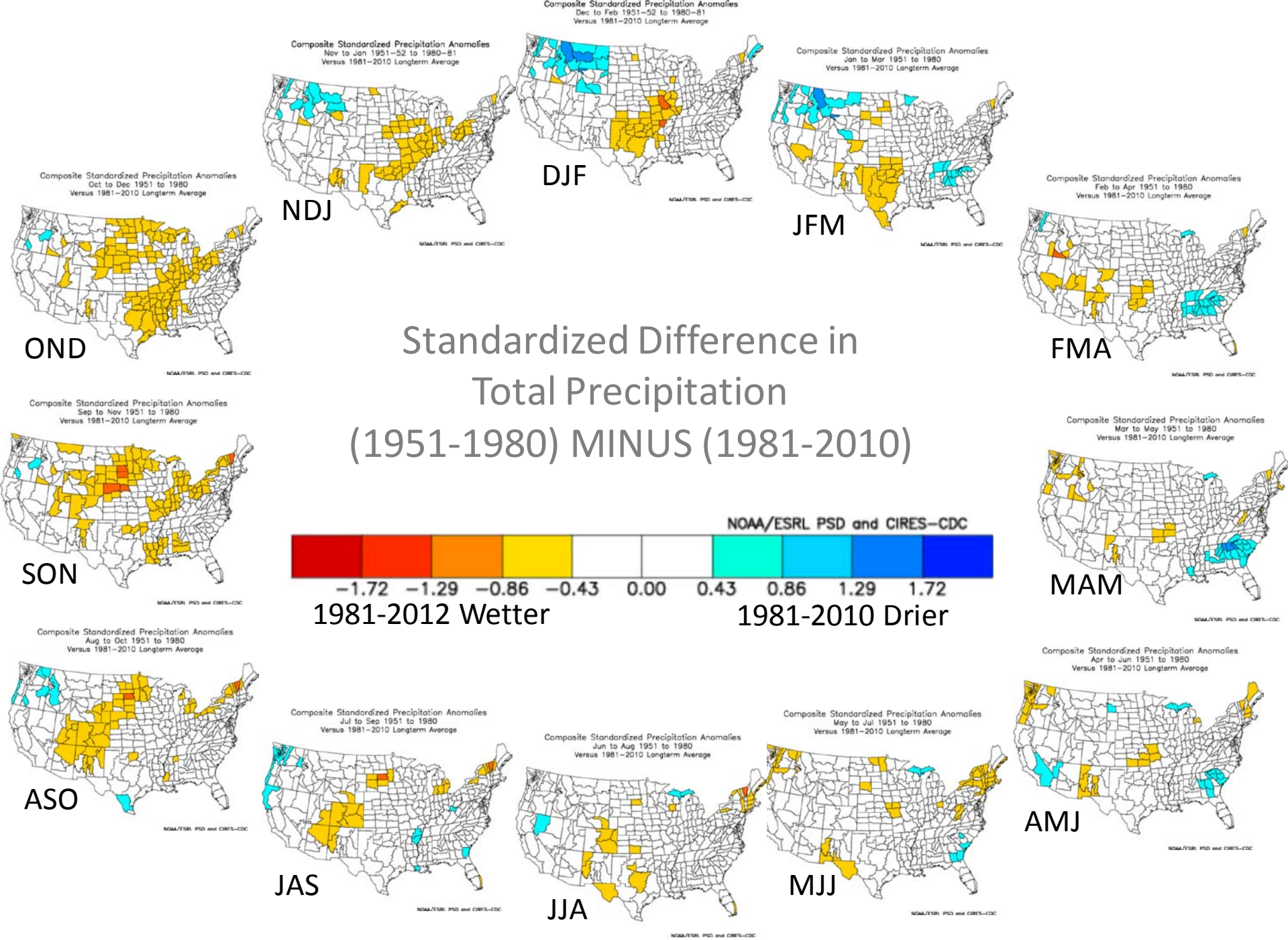
Standardized Difference in Total Precipitation (1951-1980) MINUS (1981-2010)



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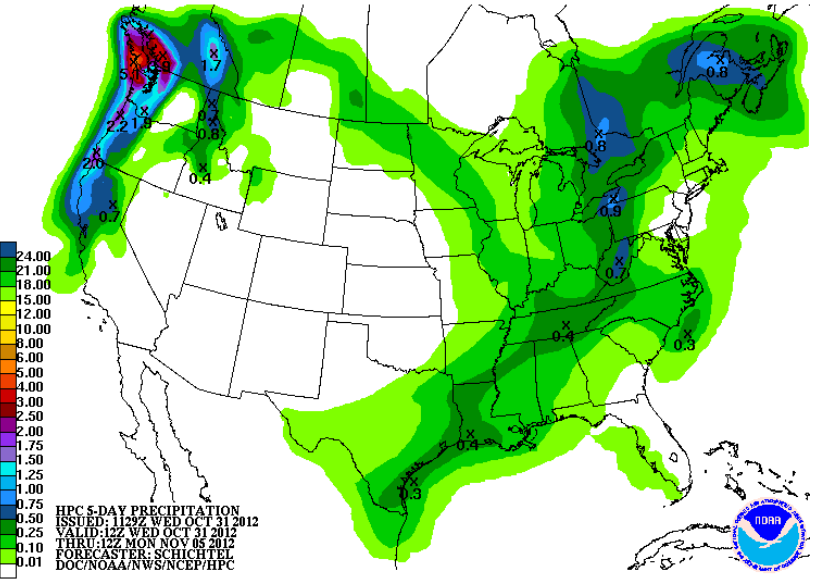
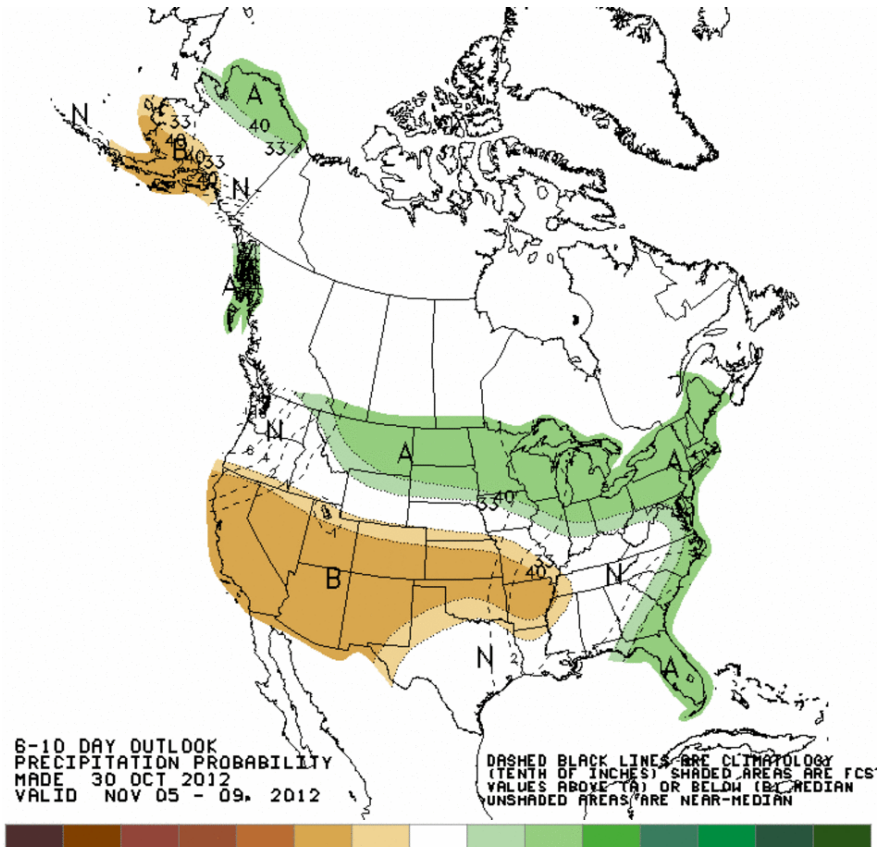
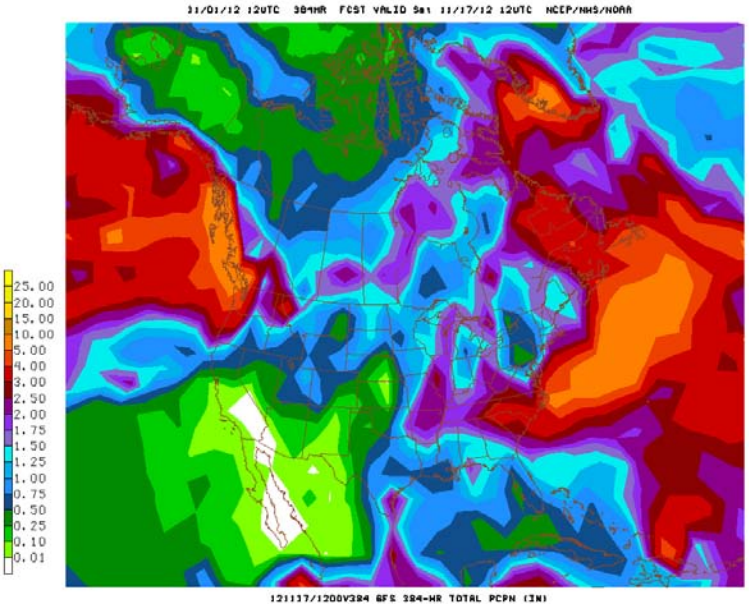
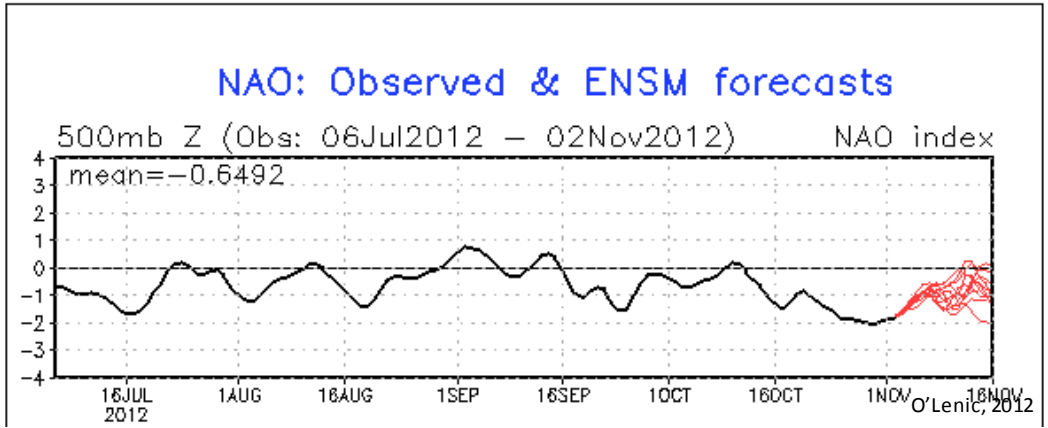
Short and Medium Range Forecast Guidance









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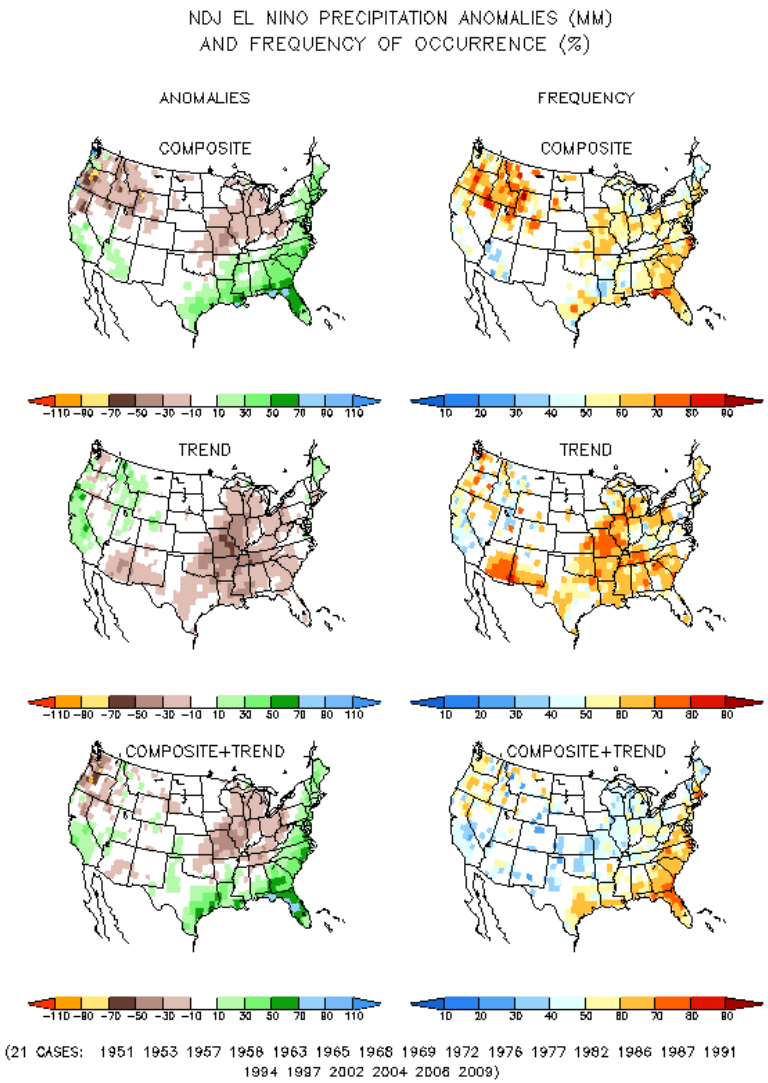

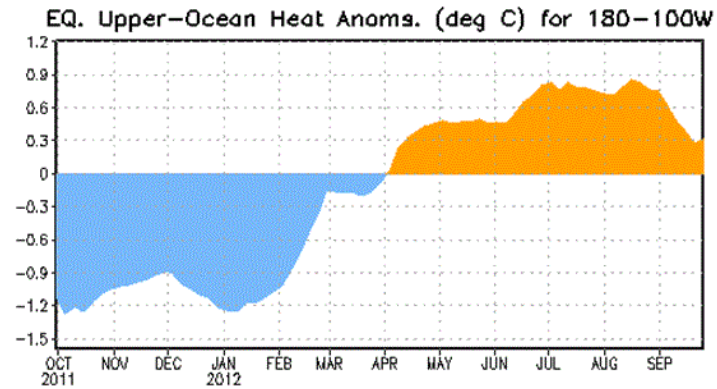

Figure 3. Area-averaged upper-ocean heat content anomaly (°C) in the equatorial Pacific (5°N-5°S, 180°-100°W). The heat content anomaly is computed as the departure from the 1981-2010 base period pentad means.

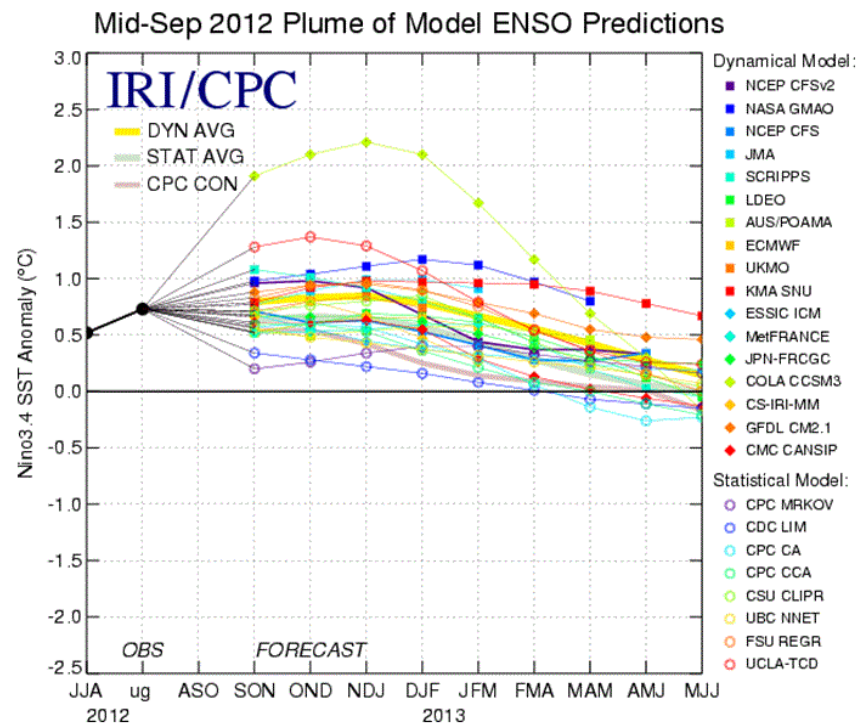

Figure 7. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure courtesy of the International Research Institute (IRI) for Climate and Society. Figure updated 18 September 2012.

Due to the weakening El Nino conditions and borderline forecast, associated climate anomalies played a smaller role in this outlook

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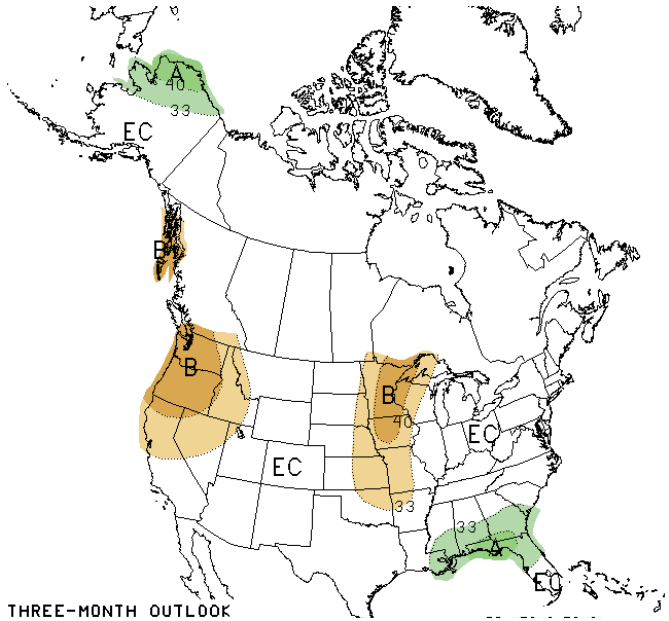
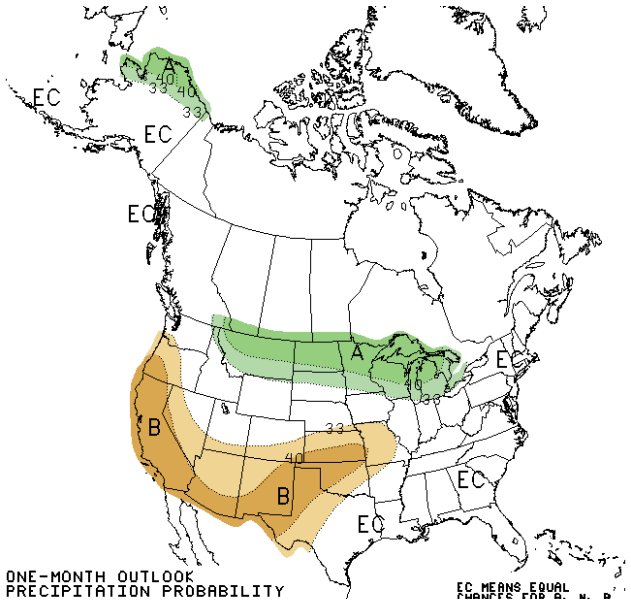
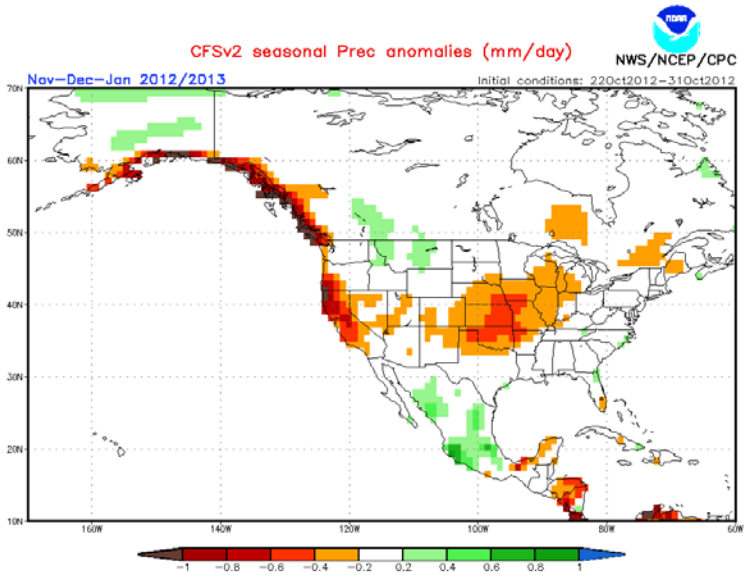
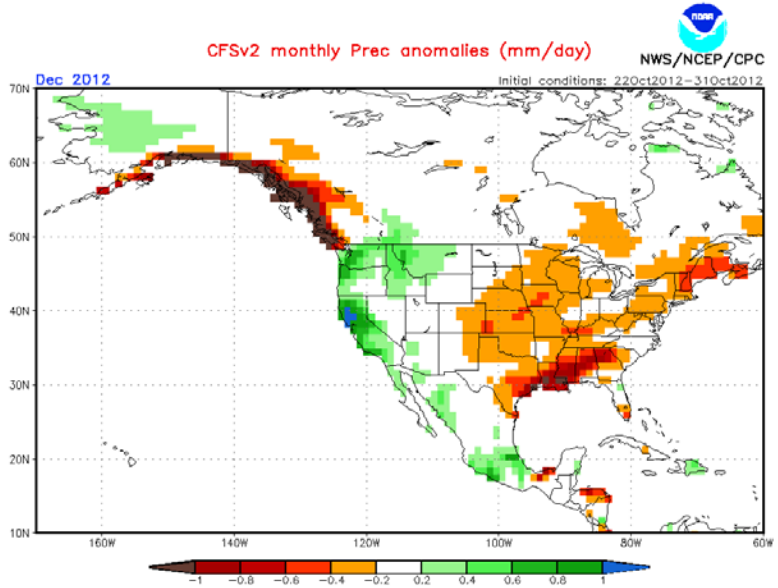
Monthly and Seasonal Forecast Guidance









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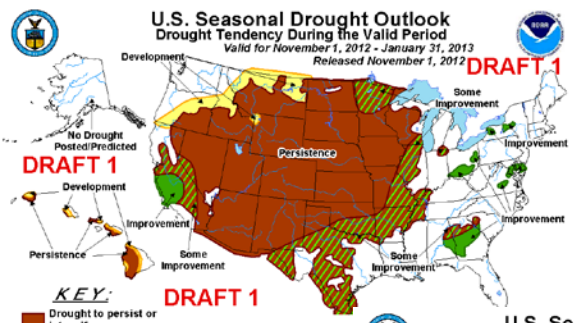
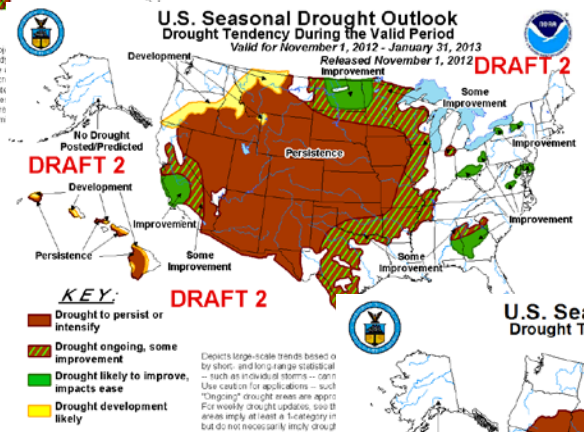
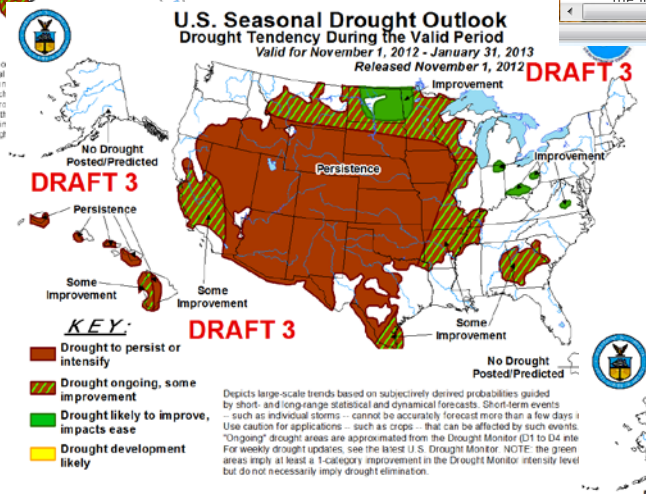
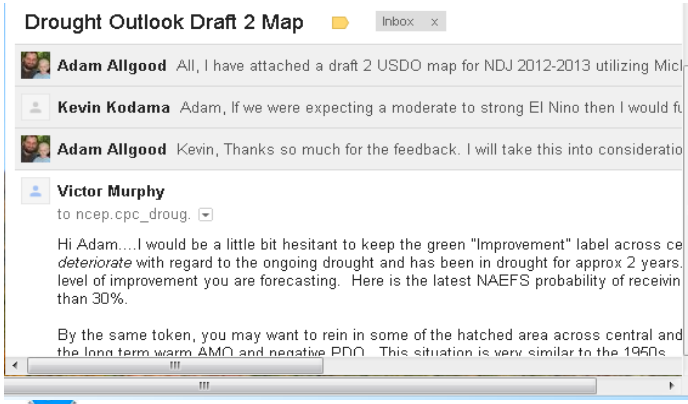
Feedback From Local Experts



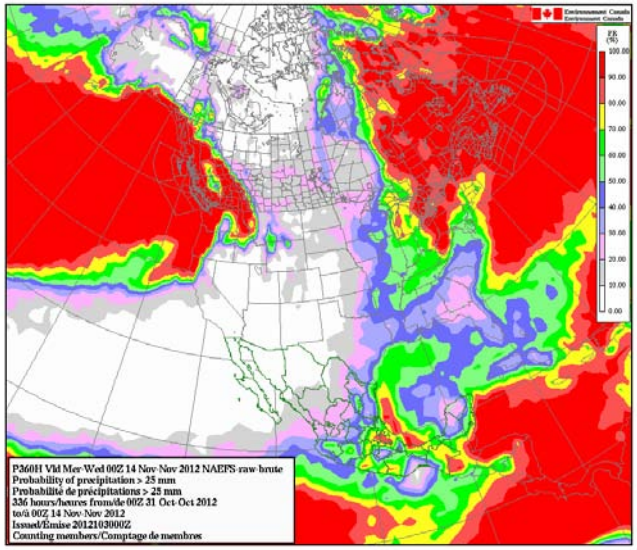


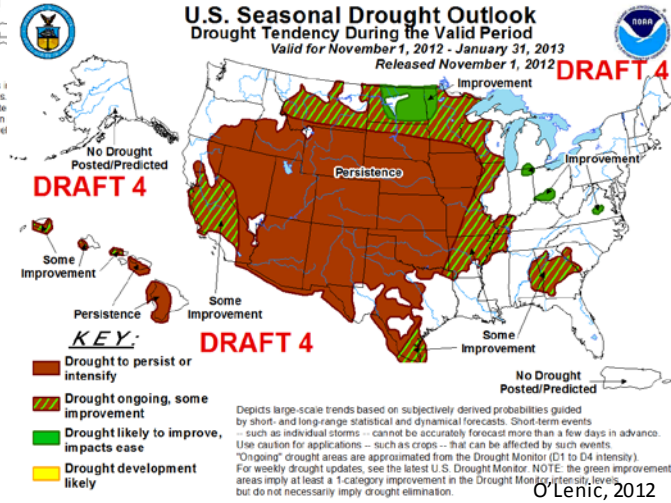




Shared discussions

Shared images





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